Contents

Preface vii

Conference Organization ix

Roughening and surface melting transitions: consequences on crystal growth
M. Bienfait 1

Temperature-dependent morphologies of gold surfaces
H.P. Bonzel, U. Breuer, B. Voigtländer and E. Zeldov 10

Can Oxygen Modify Step Arrangements? STM and LEED investigations on Ni(771)
R. Koch, O. Haase, M. Borbonus and K.H. Rieder 17

High resolution, wide range, thermal desorption spectrometry of rare gas layers: sticking, desorption kinetics, layer growth, phase transitions, and exchange processes
H. Schlichting and D. Menzel 27

Sticking and desorption: a review
K.D. Rendulic 34

Role of zero-point energy changes in H_2-surface collisions: application to Cu(111) and Pt(111)
J.E. Müller 45

Adsorption and coadsorption of CO and H_2 on Fe(111) probed by TEAS
S.L. Bernasek, M. Zappone and P. Jiang 53

On the influence of surface temperature on adsorption and desorption in the D_2/Cu(111) system
H.A. Michelsen, C.T. Rettner and D.J. Auerbach 65

Commensurate phases and phase transitions in quasi-compact submonolayers of Pb/Cu(110)
C. de Beauvais, D. Rouxel, B. Mutaftschiev and B. Bigeard 73

Atom scattering studies of structurally disordered surfaces
R.B. Gerber, A.T. Yinnon, M. Yanuka and D. Chase 81

Adsorption induced reconstruction of the Cu(110) surface
W. Moritz, R. Zuschke, S. Pflanz, J. Wever and D. Wolf 94

Coverage dependent desorption kinetics of CO from Rh(111): a theoretical analysis
S.H. Payne, H.J. Kreuzer, K.A. Peterlinz, T.J. Curtiss, C. Uebing and S.J. Sibener 102

Cu and Pd, two catalysts for CH_3OH synthesis: the similarities and the differences
V. Ponec 111

Probing surfaces with thermal energy atoms: proposal for a novel triple-axis He–surface spectrometer
K. Kuhnke, E. Hahn, R. David, P. Zeppenfeld and K. Kern 118

Multiphonon background in atom–surface scattering
J.R. Manson 130

Inelastic scattering in the trajectory approximation and its improvements
D. Himes and V. Celli 139

Collision induced fragmentation and resilience of scattered C_{60}^+ fullerenes
H.-G. Busmann, Th. Lill, B. Reif and I.V. Hertel 146

Initial growth morphology in molecular beam epitaxy of fcc iron on Cu(100)
P. Dastoor, M. Arnott, E.M. McCash and W. Allison 154

The homoepitaxial growth of Pt on Pt(111) studied with STM
M. Bott, T. Michely and G. Comsa 161

Krypton adsorption on (0001) graphite preplated with carbon tetrachloride
M. Abdelmoula, T. Ceva, B. Croset and N. Dupont-Pavlovsky 167

Ammonia and water physisorption on a H-passivated Si(111) surface: a study of admolecule motions
S. Picaud, C. Ramseyer, P.N.M. Hoang and C. Girardet 172

Structure and ordering of 2,3-dimethyl-2-butene and 2-butyne on the Ni(111) surface
A. Fricke, H. Graupner, L. Hammer and K. Müller 182

The scattering of CH ions from a Ni(110) surface: dissociation and charge exchange
H. Franke, K. Schmidt and W. Heiland 189

Molecular dynamics simulations of desorption
A.P.J. Jansen 193

Phase diagram of a model adsorbate with internal quantum states
D. Marx 198

Morphological effects induced by the formation of a Pt-adatom lattice gas on Pt(111)
T. Michely, T. Land, U. Littmark and G. Comsa 204

Roughness induced reactions of N_2 and CO_2 on noble and alkali metals
W. Akemann and A. Otto 211

Epitaxial growth of KBr onto NaCl(001) by high-resolution He atom scattering
J. Duan, G.G. Bishop, E.S. Gillman, G. Chern, S.A. Safron and J.G. Skofronick 220

State specific velocity distribution of hydrogen isotopes desorbing from Pd(100)
L. Schröter, Chr. Trame, R. David and H. Zacharias 229

Simulation of cluster growth in pores with diffusion interaction
F. Schweitzer 235

Orientation and perpendicular energy dependence of dissociative scattering of hydrogen from Cu(111)
J.-H. Rechtien, R. Harder, G. Herrmann and K.J. Snowdon 240

Monte Carlo study of surface phase transitions in lattice gases on interpenetrating square sublattices
C. Uebing 247

A molecular beam study of the O_2–Pt(111) interaction
A.E. Wiskerke, F.H. Geuzebroek, A.W. Kleyn and B.E. Hayden 256

Surface dynamics of monoatomic steps on Si(001) studied with a high temperature scanning tunneling microscope
H.J.W. Zandvliet, H.B. Elswijk and E.J. van Loenen 264

On the shape of the in-phase TEAS oscillations during epitaxial growth of Pt(111)
B. Poelsema, A.F. Becker, G. Rosenfeld, R. Kunkel, N. Nagel, L.K. Verheij and G. Comsa 269

Autocatalytic behavior and role of oxygen diffusion in the hydrogen–oxygen reaction on Pt(111)
L.K. Verheij, M. Freitag, M.B. Hugenschmidt, I. Kempf, B. Poelsema and G. Comsa 276

Size effect in the CO chemisorption on palladium clusters supported on magnesium oxide
C.R. Henry, C. Chapon, C. Goyhenex and R. Monot 283

Vibrational properties of the clean W(110) surface and of different hydrogen adsorbate phases studied by helium atom scattering
E. Hulpke and J. Lüdecke 289

A comparison between the reduction kinetics of oxidized Ni(111) and Ni(100) surfaces by hydrogen and deuterium
R.J. Vreeburg, P.K. van Tongeren, O.L.J. Gijzeman and J.W. Geus 294

Adsorption and photoreactions of NO on Nb(110) at 20 K
T.U. Bartke, R. Franchy and H. Ibach 299

Polarization-FTIR-spectroscopic study of the 2D-gas–solid transition in CO_2 on NaCl(100): reorientation, correlation field breakdown, heats of adsorption and 2D-condensation
J. Heidberg, E. Kampshoff, R. Kühnemuth and O. Schönekäs 306

Resonant electron-stimulated desorption of O^- ions from oriented O_2 on graphite
L.A. Silva and R.E. Palmer 313

Adsorbate-induced surface stress: sulfur, oxygen and carbon on Ni(100)
D. Sander, U. Linke and H. Ibach 318

The structure of sulfur overlayers on stepped Mo(910) and kinked Mo(28,4,1) single crystal surfaces
C.C. Knight and G.A. Somorjai 326

Chemisorption of H, O, and S on Ni(110): general trends
F. Besenbacher, I. Stensgaard, L. Ruan, J.K. Nørskov and K.W. Jacobsen 334

Interaction of SO_2 with clean and Cs-precovered Ag(100)
M. Höfer, H. Stolz and H.-W. Wassmuth 342

Ethane adsorbed on MgO(100) single crystal surfaces: a high resolution LEED study
M. Sidoumou, T. Angot and J. Suzanne 347

Thermodynamic study of ethane thin films adsorbed on MgO(100) powder
M. Trabelsi and J.P. Coulomb 352

Interface mode for NaCl overlayers on the Ge(001) surface
G. Brusdeylins, N.S. Luo, P. Ruggerone, D. Schmicker, J.P. Toennies, R. Vollmer and Th. Wach 358

Author index 365

Subject index 370